**Question 1 (4+3+3=10 points) Answer the following questions (in the space provided):**

1. **What issues need to be handled if the orientation of a device is changed at the runtime?** 2. **What is the concept of layout and menu inflation?**

3. **Contrast the memory management approach in Linux and Android.**

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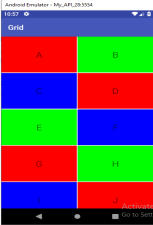
National University of Computer and Emerging Sciences, Lahore Campus **Course: Software for Mobile Devices Course Code: CS-440 Program: BS (Computer Science) Semester: Spring 2020 Duration: 90 Minutes Total Marks: 30** 

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**Question 2 (20 points)**

Red Blue 

Green Red

Suppose we want to use GridView to design a simple two-column layout for displaying alphabets (A-Z), as illustrated in the UI above. Each cell alternates among three colors (red, green and blue).

A basic code skeleton is given. Please fill-in the missing code sections to achieve the required layout. Make use of all the best practices required to handle scrolling of the contents considering re-cycling of views and the View Holder pattern.

**Layout Files**

| activity\_main.xml |
| --- |
| <**LinearLayout xmlns:android="http://schemas.android.com/apk/res/android" android:layout\_width="match\_parent"**  **android:layout\_height="match\_parent"**>  <**GridView**  **android:id="@+id/grid"**  **android:layout\_width="match\_parent"**  **android:layout\_height="match\_parent"**  **android:numColumns="2"**  **android:horizontalSpacing="5px"**  **android:verticalSpacing="5px"**  />  </**LinearLayout**> |

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| grid\_cell.xml |
| --- |
| <**TextView xmlns:android=**  **"http://schemas.android.com/apk/res/android"**  **android:layout\_width="match\_parent"**  **android:layout\_height="1in"**  **android:gravity="center"**  **android:textSize="24sp"**  >  </**TextView**> |

**Source Code**

| **public class** MainActivity **extends Activity** {  GridView **grid**;  @Override  **protected void** onCreate(Bundle savedInstanceState) {  **super**.onCreate(savedInstanceState);  setContentView(R.layout.***activity\_main***);  // specify any missing code below in the line  \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ bind();  }  **void** bind(){  String array[] = {**"A"**,**"B"**,**"C"**,**"D"**,**"E"**,**"F"**,**"G"**,**"H"**,**"I"**,**"J"**,**"K", "L"**,**"M"**,**"N"**,**"O"**,**"P"**,**"Q"**,**"R"**,**"S"**,**"T"**,**"U"**,**"V"**,**"W"**,**"X"**,**"Y"**,**"Z"**}; // specify any missing code below in the line  GridAdapter adapter = \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_; **grid**.setAdapter(adapter);  }  } |
| --- |
| **public class** GridAdapter \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ { **int**[] **colors** = {0xFFFF0000,0xFF00FF00,0xFF0000FF}; // {red,green,blue} // TextView has setBackgroundColor function for changing color |

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| // continue writing code here  } |
| --- |

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